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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/488,309	01/20/2000	Imad Mahawili PhD	MIC04 P-106	4253

28101 7590 07/17/2003

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EXAMINER

GOUDREAU, GEORGE A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 07/17/2003

16

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09-488309

Applicant(s)

mahawile

Examiner

George Goudreau

Group Art Unit

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— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 3-28-03 (ie, - paper #15)
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 2-3, 5-68-9, 11-15, 17-31, 33-56, 58, 62-63, 78-86 is/are pending in the application.
- Of the above claim(s) 33-54 is/are withdrawn from consideration.
- ☒ Claim(s) 58, 62-63, 78-86 is/are allowed.
- ☒ Claim(s) 2, 5-6, 9, 11-15, 17-19, 22-29, 31 is/are rejected.
- ☒ Claim(s) 38, 20-21, 30, 55-56 is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- ☐ Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

Office Action Summary

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15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

16. Claims 2, 5-6, 9, 11-12, 17-18, and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Shan et. al. (5,948,168).

Shan et. al. disclose an apparatus, and a method for plasma treating a substrate. The wafers (20) to be plasma treated are supported on top of a RF biased cathode (15). A variety of different types of process gasses are combined in a gas manifold (120) to form the process gas mixture. The process gas mixture are excited into a plasma using any of a variety of different types of energy sources including microwaves, RF inductively coupled coils, or RF biased capacitatively coupled plate electrodes in the plasma generation region (130). Nine quartz gas injection tubes (30, 140) are used to inject the plasma process gas mixture into the processing chamber. The gas injection tubes are mounted separately from each other in a cover which forms the ceiling of the plasma processing chamber. This is discussed specifically in columns 2-5; and discussed in general in columns 1-10. This is shown in figures 1-7.

It would have been inherent that the RF biased cathode in the apparatus taught above would provide a type of heater since it would generate heat during its operation. Thus, all of

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applicant's claimed limitations are fully met in this regard. The examiner cites the case law listed below of interest to the applicant in this regard.

In re Swinehart (169 U.S.P.Q. 226 (CCPA )) and In re Best (195 U.S.P.Q. 430 (CCPA )) state that when an examiner has reasonable basis for believing that functional characteristics asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be inherent characteristics of the prior art, the examiner possesses the authority to require an applicant to prove that the subject matter shown to be in the prior art does not possess the characteristics relied upon.

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

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19. Claims 13-14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shan et. al. as applied in paragraph 16 above further in view of Gorin (6,263,831).

Shan et. al. as applied in paragraph 16 above fail to disclose the following aspects of applicant's claimed invention:

- the specific usage of a plasma generation tube with a larger diameter than the gas injection tube which is used to inject the plasma into the processing chamber through the ceiling of the plasma processing chamber

Gorin teaches that it is desirable to use a plasma generation tube which is used to form the plasma processing gas with a larger diameter than the gas injection tube which is used to inject the plasma into the processing chamber. This is discussed specifically in columns 2-3; and discussed in general in columns 1-4. This is shown in figures 1-4.

It would have been obvious to one skilled in the art to use a plasma generation tube which is used to form the plasma processing gas with a larger diameter than the gas injection tube which is used to inject the plasma into the processing chamber through the ceiling of the plasma processing chamber in the apparatus/ process taught above based upon the following. The usage of such plasma generation/ plasma injection means is conventional or at least well known in the plasma processing arts. (The examiner takes official notice in this regard.) Further, Gorin teaches that it is desirable to do such under similar processing conditions (i.e.-plasma CVD) to those employed in Shan et. al. Further, this would desirably provide a means for more adequately

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ensuring the complete ionization of the processing gas prior to injecting the processing gas into the plasma processing apparatus.

20. Claims 2, 5-6, 9, 11-15, 17-19, 22-29, and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Kumagai (5,916,455).

Kumagai discloses a process, and apparatus for treating a wafer with a plasma in a plasma processing chamber (11). The plasma processing gas is formed of two components (i.e.-Ar gas, and process gas) which are separately fed to an anode cover (14) which is located on top of the plasma processing chamber. Ar gas from a supply tube (36) is fed to quartz tube (31) which is surrounded by a plasma ignition device so as to form an Ar plasma. The Ar plasma is then injected into the plasma processing chamber via the anode cover using a supply nozzle (32). Process gas from a supply tube (26) is then injected into the plasma processing chamber through the anode cover plate (14). This is discussed specifically in columns 1-6; and discussed in general in columns 1-8. This is shown in figures 1-2.

21. Claims 58, 62-63, and 78-86 are allowed.

22. Claims 3, 8, 20-21, 30, and 55-56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. This action will not be made final due to the new grounds of rejection.

24. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

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25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner George A. Goudreau whose telephone number is (703) -308-1915. The examiner can normally be reached on Monday through Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Examiner Gregory Mills, can be reached on (703) -308-1633. The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) -306-3186.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) -308-0661.

  
George A. Goudreau/gag

Primary Examiner

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